



## A STUDY ON PRODUCTION AND SALES TREND ANALYSIS OF SELECTED OIL COMPANIES IN INDIA



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### ABSTRACT

*After the Indian Independence, the Oil Industry in India was a very small one in size and Oil was produced mainly from Assam and the total amount of Oil production was not more than 2,50,000 tonnes per year. Production is considered as the backbone of the manufacturing sector. Production function is considered as the effective tool to satisfy the consumer's demand and to operate in an economical and efficient manner. Sales are the important component for the development of the business. Sales can be enhanced only by following good sales policy. Due to the pricing policy of the government, the companies have to face some fluctuations in the sales. These fluctuations may lead to increase or decrease the financial risk of the companies. In order to study the production and sales trends of the Oil Industry in India, the present study is carried out.*

**KEY WORDS:** *Oil Industry, Industrial Policy, Production, Gas, Corporation.*

### INTRODUCTION

After the Indian Independence, the Oil Industry in India was a very small one in size and Oil was produced mainly from Assam and the total amount of Oil production was not more than 2,50,000 tonnes per year. This small amount of production made the oil experts from different countries predict the future of the oil industry as a dull one and also doubted India's ability to search for new oil reserves. But the Government of India declared the Oil industry in India as the core sector industry under the Industrial Policy Resolution bill in the year 1954, which

helped the Oil Industry in India vastly. Oil exploration and production in India is done by companies like NOC or National Oil Corporation, ONGC or Oil and Natural Gas Corporation and OIL who are actually the oil companies in India that are owned by the government under the Industrial Policy Rule.

### STATEMENT OF THE PROBLEM

Production is considered as the backbone of the manufacturing sector. Production function is considered as the effective tool to satisfy the consumer's demand and

to operate in an economical and efficient manner. The study of the production performance is important to know the operating level of the business and financial efficiency of the business enterprise. Survival of the business in the present competitive world depends on the quality production and the technological development in the business. Therefore, the present study attempts to study the production trend of the Indian Oil Industry after Liberalization. Sales are the important component for the development of the business. Sales can be enhanced only by following good sales policy. Due to the pricing policy of the government, the companies have to face some fluctuations in the sales. These fluctuations may lead to increase or decrease the financial risk of the companies. In order to study the production and sales trends of the Oil Industry in India, the present study is carried out.

### **OBJECTIVES OF THE STUDY**

The following are the objectives of the study

1. To analyze the Production trend of selected Oil companies.
2. To analyze the Sales trend of selected Oil companies
3. To make suggestions for improvement of Oil companies.

### **SIGNIFICANCE OF THE STUDY**

Performance appraisal is of special importance in industries and Oil is one such industry. From the point of view of the socio-economic development of the country, Oil industry is significant enough in terms of investment and employment. The sales and profitability function in Oil industry differ from that of other industries. Even though many studies in this direction have been conducted, the present one would be of greater significance to many. It would help to understand the pattern and the structure of financial variables of leading companies apart from identifying the financial relationship of companies with their respective industries. The change in the economic policy of the government certainly has got impact on the performance of corporate units in India. A need at the present juncture is therefore felt to study the impact of such changes on the performance of corporate sector. As such, the study is expected to help the corporate management, the financiers, the investors and the government at large, to take valuable decisions at their own. Further, it would provide insight to banks, financial institutions and long-term lenders to understand the financial capability effectiveness of the companies.

### **METHODOLOGY**

The objective of this part to present methodology adopted in collection and analysis of data for this study. It outlines the procedure followed for selection of sample, sources of data, the techniques followed in analyzing the data and the period of study. Further, the hypothesis said and limitations of the study have also been dealt herein.

### **SAMPLING DESIGN**

Keeping in view the scope of the study, Indian oil companies has been selected purposively. There are twenty two public sector companies operating in Indian oil companies for the purpose of the study three companies have been selected namely Bharat Petroleum Corporation Limited, Hindustan Petroleum Corporation Limited and Indian Oil Corporation Limited

### **PERIOD OF STUDY**

The period 2005-2006 to 2012-13 is selected for this study. This 8 year period is chosen in order to have a fairly long, cyclically well balanced period, for which reasonably homogeneous, reliable and up-to-date financial data would be available.

### **SOURCE OF DATA**

The study is mainly based on secondary data. The data analyzed and interpreted in this study related to all those industries selected are collected from "Capitaline" and "PROWESS" databases, which are the most reliable on the empowered corporate database of Bombay Stock Exchange and Centre for Monitoring Indian Economy (CMIE) respectively.

### **TOOLS OF ANALYSIS**

1. Mean
2. Co-efficient of variation
3. Compound Annual Growth Rate
4. Trend Analysis
5. Chi-square test

### **LIMITATIONS OF THE STUDY**

1. The study is based on secondary data obtained from the published annual reports and as its finding depends entirely on the accuracy of such data.
2. The study is covered only three selected companies. So the finding may not be applicable to entire industries as a whole.

## DATA ANALYSIS AND INTERPRETATIONS

### Analysis of Production trend:-

Production may be considered as the back bone of the manufacturing business enterprises. The production data of a company may give an idea as to how the company has performed is the year under review as compared to the past or how the company as performed as compared to other companies of the same industry. The production performance of the industry as a whole can be compared with different years; also the comparison can be done in between the competitive industries. For appraising the production performance of individual companies, production is different years can be compared and inter-company comparison between companies under study may be more meaningful for this purpose. The analysis of capacity utilization can also significantly prove the production performance of a company or of the industries as a whole. All these techniques have been adopted to appraise the production performance of the Oil industry in the present study.

An attempt has also been made to estimate and co-efficient for production of Oil is India during the study period by fitting a linear regression model. The linear model fitted is as follows:

$$P = \alpha + \beta t + e$$

Where, P is rate of Production, t is the time and  $\alpha$  and  $\beta$  are the parameters (intercept and co-efficient respectively) and e is the error term. To test whether the difference between actual production and estimated production was significant or not, the following hypothesis is framed and tested.

**H<sub>0</sub> - There is no significant difference between actual productions and the trend values of production among different years.**

(Or)

**H<sub>a</sub> - There is no significant difference between actual productions and the trend values of production among different years.**

The production trend for the selected public sector oil companies during the study period presented in Table 1.1

**Table 1.1 Actual production of oil companies in India (Rs. in crores)**

Years	BPCL		HPCL		IOCL	
	Production	Index	Production	Index	Production	Index
2005-06	39082.09	100	39398.12	100	99357.9	100
2006-07	51665.41	132	51042.13	130	110595.42	111
2007-08	54729.53	140	53552.67	136	117754.43	119
2008-09	65011.71	166	63107.75	160	136517.8	137
2009-10	76702.56	196	76370.75	194	165352.53	166
2010-11	97310.5	249	94290.74	239	201880.06	203
2011-12	110427.4	283	112344.53	285	232647.69	234
2012-13	133702.5	342	127297.34	323	285435.06	288
<b>Mean</b>	<b>78578.97</b>		<b>77175.5</b>		<b>16869.6</b>	
<b>CV</b>	<b>0.42</b>		<b>0.41</b>		<b>3.97</b>	
<b>CAGR</b>	<b>19.21</b>		<b>18.24</b>		<b>16.84</b>	

Source: Computed from the Annual reports of the respective companies

**Table 1.2 Trend value of production of selected Indian oil companies (Rs. in crores)**

YEARS	BPCL	HPCL	IOCL
2005-2006	32929.52	33122.02	77275.4
2006-2007	45972.22	45708.73	103394.6
2007-2008	59014.92	58295.44	129513.8
2008-2009	72057.62	70882.15	155633.0
2009-2010	8510.32	83468.86	181752.2
2010-2011	98143.02	96055.37	207871.4
2011-2012	111185.72	108642.28	233990.6
2012-2013	124228.42	121228.99	260109.8
<b>Chi-square (<math>\chi^2</math>)</b>	<b>4418.2</b>	<b>4116.06</b>	<b>14353.26</b>

Trend equation: BPCL:  $Y = 19886.82 + 13042.70 t$

HPCL:  $Y = 20586.31 + 12586.71 t$

IOCL:  $Y = 51156.20 + 26119.20 t$

Source: Computed

**Table 1.3 Forecasting of production of selected Indian oil companies  
(Rs. in crores)**

YEARS	BPCL	HPCL	IOCL
2014-2015	150313.82	146402.41	312348.2
2015-2016	163356.52	158989.12	338467.4
2016-2017	176399.22	171575.83	364586.6
2017-2018	189441.92	184162.54	390705.8
2018-2019	202484.62	196749.25	416825.0

Source: Computed

The actual production of BPCL has been increased from Rs.39082.09 crores in 2005-2006 to Rs.133702.53 crores, registering increase of 3.42 times during the study period (Table 1.1). The production of BPCL registered an increasing trend during the study period. The average production of BPCL has been worked out as Rs.78578.97 crores during the study period. The analysis of CV showed that the production of BPCL marked highly fluctuation during the study period. Further, the production of BPCL registered positive growth rate (19.21 percent) during the study period.

It is evident from the Table 1.2 that the least square trend values of production of BPCL showed an average annual increase of production comes to Rs.13042.70 crores. The difference in actual and trend values was positive in the years 2005-06, 2006-07 and 2012-13 while they were negative during the years 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12. In BPCL, the difference between the actual and trend value of profitability is significant because the calculated value of chi-square comes to 4418.2 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significant. Further, the production of BPCL is estimated as Rs.202484.62 crores during the year 2018-19.

The actual production of HPCL has been increased from Rs.39398.12 crores in 2005-06 to Rs.127297.34 crores, registering increase of 3.23 times during the study period (Table 1.3). The production of HPCL registered an increasing trend during the study period. The mean production of HPCL has been worked out as Rs.77175.5 crores during the study period. The analysis of CV showed that the production of HPCL marked highly fluctuation during the study period. Further, the production of HPCL registered positive growth rate (18.24 percent) during the study period.

It is indicated from the Table 1.2 that the least square trend values of production of HPCL showed an average annual increase of production comes to Rs.12586.71 crores. The difference in actual and trend values was positive in the years 2005-06, 2006-07 and 2012-13 while they were negative during the years 2007-08 to 2011-12. In HPCL, the difference between the actual and

trend value of profitability is significant because the calculated value of chi-square comes to 4116.06 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significance. Further, the production of HPCL is estimated as Rs.196749.25 crores during the year 2018-19.

The actual production of IOCL has been increased from Rs.99357.9 crores in 2005-06 to Rs.285435.06 crores, registering increase of 2.87 times during the study period. The production of IOCL registered an increasing trend during the study period. The mean production of IOCL has been worked out as Rs.16869.6 crores during the study period. The analysis of CV showed that the production of IOCL marked erratically fluctuation during the study period. Further, the production of IOCL registered positive growth rate (16.4 percent) during the study period.

It is evident from the Table 1.2 that the least square trend values of production of IOCL showed an average annual increase of production comes to Rs.26119.20 crores. The difference in actual and trend values was positive in the years 2006-07 and 2012-13 while they were negative during the years 2005-06, 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12. In IOCL, the difference between the actual and trend value of profitability is significant because the calculated value of chi-square comes to 14353.26 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significant. Further, the production of IOCL is estimated as Rs.416825 crores during the year 2018-19.

## ANALYSIS OF SALES TREND

'Sales' is the value of the output offered to the customers. It is the life blood of a business enterprise without which the business cannot survive. Further, 'sales' is the indicator of the operational efficiency of management is how efficiency the management has used the assets of the business. The higher the volume of sales, the more efficient the management. Sales are also related to profitability of an enterprise. If other things remain constant, the higher the amount of sales, the more profitable the business is and vice versa. The trend of

sales indicates the direction in which forecast for further can be made. The trend analysis of sales helps to understand the growth of a business enterprise. For proper trend analysis, the trend should be studied at least over a period of five or more years<sup>3</sup>. The sales performance of an enterprise can be measured in a number of ways. The sales performances of the industry as a whole can be compared with different years; also the comparison can be done in between the competitive industries. The analysis of market share can also significantly prove the sales performance of a company or of the industry as a whole. All these techniques have been adopted to appraise the sales performance of the Oil industry in the present section. An attempt has also been made to estimate and co-efficient for sales of Oil is India during the study period by fitting a linear regression model. The linear model fitted is as follows:

$$S = r + St + e$$

Where, S is rate of sales, t is the time and  $\alpha$  and  $\beta$  are the parameters (intercept and co-efficient respectively) and e is the error term. To test whether the difference between actual sales and estimated sales was significant or not, the following hypothesis is framed and tested.

**H<sub>0</sub> - There is no significant difference between actual sales and the trend values of sales among different years.**

(or)

**H<sub>a</sub> - There is no significant difference between actual sales and the trend values of sales among different years.**

**Table 1.6 Actual sales of oil companies in India**

(Rs. in crores)

Years	BPCL		HPCL		IOCL	
	Sales	Index	sales	Index	sales	Index
2005-06	39421.8	100	39656.59	100	99735.12	100
2006-07	49951.74	127	49838.75	126	107832.6	108
2007-08	54849.25	139	53161.78	134	116923.4	117
2008-09	62991.88	160	63039.32	159	134348.5	135
2009-10	75850.79	192	75011.11	189	162418.33	163
2010-11	97189.37	247	93912.34	237	201493.84	202
2011-12	110743.6	210	109966.37	277	229848.27	230
2012-13	135251.8	343	129242.8	326	288227.44	289
<b>Mean</b>	<b>78281.27</b>		<b>76728.63</b>		<b>167603.4</b>	
<b>CV</b>	<b>0.42</b>		<b>0.41</b>		<b>0.39</b>	
<b>CAGR</b>	<b>19.26</b>		<b>18.39</b>		<b>16.37</b>	

Source: Computed from the Annual reports of the respective companies

**Table 1.7 Trend value of sales of selected Indian oil companies (Rs. in crores)**

YEARS	BPCL	HPCL	IOCL
2005-2006	31837.6	32480.09	38799.03
2006-2007	45107.22	45122.53	72457.43
2007-2008	58376.84	57764.97	106115.83
2008-2009	71646.46	70407.41	139774.23
2009-2010	84916.08	83049.85	173432.63
2010-2011	98185.7	95692.29	207091.03
2011-2012	111455.32	108334.73	240749.43
2012-2013	124724.92	120977.17	274407.83
<b>Chi-square (<math>\chi^2</math>)</b>	5456.47	4617.00	116526.17

**Trend equation: BPCL: Y = 18597.98 + 13269.62 t**

**HPCL : Y = 19837.65 + 12642.44 t**

**IOCL : Y = 5140.63 + 33658.40 t**

Source: Computed

**Table 1.8 Forecasting of sales of selected Indian oil companies  
(Rs. in crores)**

YEARS	BPCL	HPCL	IOCL
2014-2015	151264.18	146262.05	341724.63
2015-2016	164533.8	158904.49	375383.03
2016-2017	177803.42	171546.93	409041.43
2017-2018	191073.42	184189.37	442699.83
2018-2019	204342.66	196831.81	476358.23

Source: Computed

The sales trend for the selected public sector oil companies during the study period presented in Table 1.6

The actual sales of BPCL has been increased from Rs.39421.8 crores in 2005-2006 to Rs.135251.77 crores, registering increase of 3.43 times during the study period (Table 3.6). The sales of BPCL registered an increasing trend during the study period. The average sales of BPCL have been worked out as Rs.78281.27 crores during the study period. The analysis of CV showed that the sales of BPCL marked moderate fluctuation during the study period. Further, the sales of BPCL registered positive growth rate (19.26 percent) during the study period.

It is evident from the Table 1.7 that the least square trend values of sales of BPCL showed an average annual increase of sales comes to Rs.13269.62 crores. The difference in actual and trend values was positive in the years 2005-06, 2006-07 and 2011-12 while they were negative during the years 2007-08, 2008-09, 2009-10, 2010-11 and 2012-13. In BPCL, the difference between the actual and trend value of profitability is significant because the calculated value of chi-square comes to 5456.47 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significant. Further, the sales of BPCL are estimated as Rs.204342.66 crores during the year 2018-19 (Table 1.8).

The actual sales of HPCL had been increased from Rs.39656.59 crores in 2005-06 to Rs.129242.8 crores, registering increase of 3.26 times during the study period (Table 3.6). The sales of HPCL registered an increasing trend during the study period. The average sale of HPCL has been worked out as Rs.76728.63 crores during the study period. The analysis of CV showed that the sales of HPCL marked highly fluctuation during the study period. Further, the sales of HPCL registered positive growth rate (18.39 percent) during the study period.

It is evident from the Table 1.7 that the least square trend values of sales of HPCL showed an average annual increase of sales comes to Rs.12642.44 crores. The difference in actual and trend values was positive in the years 2005-06, 2006-07, 2011-12 and 2012-13 while they were negative during the years 2007-08 to 2010-11. In HPCL, the difference between the actual and trend value of profitability is significant because the calculated value of chi-square comes to 4617.0 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significant. Further, the sale of HPCL is estimated as Rs.196831.81 crores during the year 2018-19 (Table 1.9).

The actual sales of IOCL has been increased from Rs.38799.03 crores in 2005-06 to Rs.274407.17 crores, registering increase of 7.07 times during the study period (Table 3.6). The sales of IOCL registered an increasing trend during the study period. The average sale of IOCL has been worked out as Rs.167603.4 crores during the study period. The analysis of CV showed that the sales of IOCL marked highly fluctuation during the study period. Further, the sales of IOCL registered positive growth rate (16.37 percent) during the study period.

It is evident from the Table 1.7 that the least square trend values of sales of HPCL showed an average annual increase of sales comes to Rs.33658.4 crores. The difference in actual and trend values was positive in the year 2005-06, 2006-07, 2007-08 and 2012-13 while they were negative 2008-09 to 2011-12. In IOCL, the difference between the actual and trend value of profitability is significant because the calculated value of chi-square comes to 116526.17 which highly exceeds the table value of chi-square 14.07 at 5 percent level of significant. Further, the sale of IOCL is estimated as Rs.476358.23 crores during the year 2018-19 (Table 1.8).

**SUGGESTIONS**

1. The direct taxes on petroleum products in India are very high - a moderate indirect tax regime would support the high growth rate that India aspires to achieve in both short and medium term.
2. It also suggests that while formulating the tax rates, countries like India should phase out subsidies gradually, keeping in mind the socio political aspects of the issue.
3. The ratio of excise duty to retail prices in India are as high as 36% for petrol and 17% for diesel, which by far are the highest as compared to other developing countries like China, Indonesia, Pakistan, Thailand and Philippines. Hence, it should be reduced to below 15%.
4. Our country is importing petroleum at high cost and passing the benefit to some miscreants black marketers and the burden of high cost of import is borne by the general public in the form of general hike in the prices of everything.

**CONCLUSION**

The analysis of Production, Sales and Profit trends of the selected oil companies indicates good performance during the study period. The comparison of sales performance among the three companies revealed that

the sales of IOCL are the highest, followed by BPCL and HPCL. The sales performance of all the three companies registered highly fluctuation during the study period. All the three companies registered positive compound annual growth rate in sales during the study period. To conclude, the sales performance of IOCL is better than the BPCL and HPCL. The comparison of production performance among the three companies revealed that the production of BPCL is the highest, followed by HPCL and IOCL. The production performance of BPCL and HPCL are highly fluctuation while the production of IOCL is erratically fluctuation during the study period. All the three companies registered positive compound annual growth rate in production during the study period. To conclude, the production performance of BPCL is better than the HPCL and IOCL.

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